

1 **Claims**

2 What is claimed is:

3 (1) a machine for measuring angles about a plurality of axes, comprising:

4
5 one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors

6 /accelerometers, situated about different axis; and

7
8 a computing device, for example, a microprocessor, that receives inputs from the said

9 tilt sensor(s)/accelerometer(s), translates them into expressions of angular

10 measurement and outputs the results for display, computation, or extraction;

11
12 ²
~~(1A)~~ a machine for measuring angles about a plurality of axes, comprising:

13
14 one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors

15 /accelerometers, situated about different axis; and

16
17 a computing device, for example, a microprocessor, that receives inputs from the said

18 tilt sensor(s)/accelerometer(s), translates them into expressions of angular

19 measurement, calculates compounded angles of the various angles it measures and

20 outputs the results for display, computation, or extraction;

21
22 ³
~~(2)~~ a machine as in claims (1) or ²~~(1A)~~ wherein a means of information extraction is

23 incorporated, in example, a communications port or infra-red transmitter/receiver.

1 ¹
~~(3)~~ a machine as in claim (1) or ²~~(1A)~~ that displays the results of the measurements
2 and/or calculations in graphic form.

3
4 ⁵~~(3A)~~ a machine as in claim ⁴~~(3)~~ wherein multiple displays may be exhibited
5 simultaneously.

6
7 ⁶~~(3B)~~ a machine as in claim ⁴~~(3)~~ wherein multiple displays may be exhibited sequentially.

8
9 ⁷~~(3C)~~ a machine as in claim ⁴~~(3)~~ wherein multiple displays modes are controllable, being
10 user selectable to exhibit simultaneously or sequentially.

11
12 ⁸~~(3D)~~ a machine as in claim ⁴~~(3)~~ wherein one or more graphic displays resemble the form
13 of a bull's-eye bubble level.

14
15 ⁹~~(3E)~~ a machine as in claim ⁴~~(3)~~ wherein one or more graphic displays resemble the form
16 of a curved-tube bubble level.

17
18 ¹⁰~~(3F)~~ a machine as in claim ⁴~~(3)~~ wherein the displays appear on different faces of the
19 machine's case according to the axis about which the measurements or calculations
20 producing them are made.

21
22 ¹¹~~(3G)~~ a machine as in claim ⁴~~(3)~~ that, having calculated a compound angle, can display a
23 line representing the edge of the plane in which that angle lies.

24

¹²
 1 ~~(4)~~¹² a machine as in claim (1) or ~~(1A)~~² that displays the results of the measurements
 2 and/or calculations in numeric form.

¹³
 3
 4 ~~(4A)~~¹³ a machine as in claim ~~(4)~~¹² wherein multiple displays may be exhibited
 5 simultaneously.

¹⁴
 6
 7 ~~(4B)~~¹⁴ a machine as in claim ~~(4)~~¹² wherein multiple displays may be exhibited sequentially.

¹⁵
 8
 9 ~~(4C)~~¹⁵ a machine as in claim ~~(4)~~¹² wherein multiple displays modes are controllable, being
 10 user selectable to exhibit simultaneously or sequentially.

¹⁶
 11
 12 ~~(4D)~~¹⁶ a machine as in claim ~~(4)~~¹² wherein the displays appear on different faces of the
 13 machine's case according to the axis about which the measurements or calculations
 14 producing them are made.

¹⁷
 15
 16 ~~(4E)~~¹⁷ a machine as in claim ~~(4)~~¹² that, having calculated a compound angle, can display a
 17 line representing the edge of the plane in which that angle lies.

¹⁸
 18
 19 ~~(5)~~¹⁸ a machine as in claim (1) or ~~(1A)~~² wherein the display format is user controllable,
 20 allowing selection of either graphic or numeric format.

¹⁹
 21
 22 ~~(5A)~~¹⁹ a machine as in claim ~~(5)~~¹⁸ wherein multiple displays may be exhibited
 23 simultaneously.

- 1 ²⁰~~(5B)~~ a machine as in claim ¹⁸~~(5)~~ wherein multiple displays may be exhibited sequentially.
- 2
- 3 ²¹~~(5C)~~ A machine as in claim ¹⁸~~(5)~~ wherein multiple displays modes are controllable, being
- 4 user selectable to exhibit simultaneously or sequentially.
- 5
- 6 ²²~~(5D)~~ a machine as in claim ¹⁸~~(5)~~ wherein one or more graphic displays resemble the form
- 7 of a bull's-eye bubble level.
- 8
- 9 ²³~~(5E)~~ a machine as in claim ¹⁸~~(5)~~ wherein one or more graphic displays resemble the form
- 10 of a curved-tube bubble level.
- 11
- 12 ²⁴~~(5F)~~ a machine as in claim ¹⁸~~(5)~~ wherein the displays appear on different faces of the
- 13 machine's case according to the axis about which the measurements or calculations
- 14 producing them are made.
- 15
- 16 ²⁵~~(5G)~~ a machine as in claim ¹⁸~~(5)~~ that, having calculated a compound angle, can display a
- 17 line representing the edge of the plane in which that angle lies.
- 18
- 19 ²⁶~~(8)~~ a machine as in claims (1) or ²~~(1A)~~ wherein angles may be measured and/or
- 20 calculated in multiple modes comprising various levels of precision and of speed of
- 21 measurement and/or calculation.
- 22
- 23 ²⁷~~(8A)~~ a machine as in claim ²⁶~~(8)~~ wherein the modes of measurement and/or calculation
- 24 may be selected automatically by the machine itself.

1 ²⁸~~(8B)~~²⁴ A machine as in claim ~~(8)~~²⁴ wherein the modes of measurement and/or calculation
2 may be manually selected by the user.

3
4 ²⁹~~(9)~~² a machine as in claims (1) or ~~(1A)~~² wherein one or more means of orienting the
5 device with respect to distant or remote reference points is incorporated, these means
6 being preferably by use of a laser light or other electromagnetic energy beam projected
7 from the device, but also including optical sight or reticule, audio beam, mechanical arm
8 or extension, or any other manner of remote reference.

9
10 ³⁰~~(10)~~² a machine as in claims (1) or ~~(1A)~~² wherein the measurements and results of
11 calculations may be recorded and later ²displayed or output for reference.

12
13 ³¹~~(11)~~² a machine as in claims (1) or ~~(1A)~~² wherein the computing component, for example,
14 a micro-processor, can automatically select a display mode in accordance with the
15 orientation of the device as detected by the sensor module.

16
17 ³²~~(12)~~² a machine as in claim (1) or ~~(1A)~~² wherein the ambient temperature is measured
18 and displayed for calibration purposes.

19
20 ³³~~(13)~~² a machine as in claim (1) or ~~(1A)~~² wherein a discrete signal, for example, audio,
21 visual, or electrical, is emitted when the unit attains one or more pre-determined
22 angular position(s).

23

1 ³⁴ ~~(14)~~ a machine as in claim (1) or ² ~~(1A)~~ wherein an alarm signal is emitted that varies in
2 accordance with the machine's proximity to pre-determined angles;

3
4 ³⁵ ~~(15)~~ a machine as in claim (1) or ² ~~(1A)~~ also comprising a means of recording, or of
5 storing in a memory, a baseline or zero point for each axis from whence angles may be
6 measured;

7 ³⁶ ~~(16)~~ a machine as in claim (1) or ² ~~(1A)~~ wherein the functions of angular measurement
8 may be set to reset to zero at pre-determined or user selected angles, presenting, at
9 each applicable angle, a display such as would be exhibited by a conventional bubble
10 inclinometer in the level position.

11

12

13

14

15

16

17

18

19

20

21

22

23

24